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THE UNITED ARAB REPUBLIC (EGYPT)

Improvement of Agricultural
Statistics

and

Market Potential for
United States Agricultural
Products

By

Vernon C. Struck

July 1965

U. S. DEPT. OF AGRICULTURE
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It is an independent study. The views expressed herein are those of the contractor and do not necessarily reflect those of the United States Department of Agriculture.

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INTRODUCTION

This report presents the results of a market development research project undertaken in the United Arab Republic (Egypt) 1/ during the period March 10 through May 3, 1963. The study was carried out under contractual arrangements between the Foreign Regional Analysis Division, Economic Research Service, United States Department of Agriculture and Mr. Vernon C. Struck, the author. The study began on March 1, 1963 and was completed on May 30, 1963.

The objectives of the study were as follows:

1. To develop the best serviceable information available on supply and utilization of agricultural products in Egypt and prepare food balances for 1956-61; and
2. To appraise market potential for selected United States agricultural commodities in the UAR for the next several years.

The author spent ten days in Washington, D. C. prior to making the market study in the UAR. During the orientation period country specialists of the Africa and Middle East Branch reviewed the agricultural and related statistics of Egypt, with particular emphasis on food balances, and discussed the general framework for analysis of world policies. Commodity specialists of the Foreign Agricultural Service consulted with the author and raised a number of pertinent questions with respect to the agricultural statistics of the UAR.

As a result of these conferences a supplemental plan of work was developed to serve as a guide to help achieve the goals of the study. Following are some of the major points pursued in carrying out the study:

1. Determine as specifically as possible the basis and technique used by the Egyptian Government for estimating acreage, production and yield on all crops being estimated. Include information on methodology, sampling and nonsampling error and elaborate on commodities with special estimating problems.
2. Investigate and appraise commodity data problems including accuracy and availability checks where possible.
3. Investigation of questions and problems advanced by commodity specialists in Foreign Agricultural Service.

Agricultural data required for the preparation of food balances were collected and appraised. An important part of the appraisal is a description of the UAR data collection system. Prior to this study little information was available about crop estimating procedures or the extent to which agricultural data are available.

In addition an appraisal was made of the market potential for U.S. agricultural products in the UAR. This appraisal was largely subjective and based on the assumption that the Egyptian economy would continue to make progress in its program of economic development.

1/ Hereinafter referred to in this report as the "UAR".

SUMMARY AND CONCLUSIONS

Market Potential

The outlook for dollar sales for U. S. agricultural products in the short run (4 years) is very dim. Most of the needs of the UAR are now met through the food for peace program. Long run outlook or possibilities for sales are good based on both needs and possible availability of hard currency in the Egyptian treasury. However, steps should be taken at this time to develop this future market thru better use of P.L. 480 donations.

Market potential for U.S. agricultural products in the UAR is closely related to the economic development of the country. The market for any commodity will be a function of rate and amount of increase in economic and social development. (Implied is an increase in disposable consumer income and a shift in food preference as incomes increase and cultural pattern change.) In the long run U.S. market potential in the UAR will be strengthened through aid given to help develop its economy. (It is beyond the scope of this report to consider politico-economic effects.)

The key to effective market development in the UAR is a well planned long range development aid program. This approach is costly, however, it must be planned in terms of the total U. S. foreign aid program*.

The UAR is an example of a developing country that could become a good future market for U.S. products. For this reason current aid oriented toward developing the market should be considered, i.e. properly packaging nonfat dry milk solids in consumer packages along with product promotion. It is impossible to build a consumer market for N.F. D.M. solids from bulk shipments that arrive in a high "lactic acid" condition and with local authorities left with the distribution problem. Of necessity they choose the distribution method with the lowest cost which in most instances does little to develop a market for U.S. products should there eventually be one.

In considering any program for market development or measure of future potential for a commodity the nature of the Egyptian economy must be kept in mind. The entire economy is strictly controlled and planned. Any substantial change in market demand or dietary pattern is dependent upon trade policy and agricultural and industrial development plans of the government.

*With limited funds available from the U.S. for foreign aid it means that aid programs must be highly selective. Selection made on the basis of net benefit to the U.S. as well as the recipient country. In some countries aid programs are relatively ineffective or show very minimal progress over a long period of time (or in some cases negative results). There are many good reasons for this none of which necessarily involve the personnel conducting aid programs. The reason for slow progress probably lies closer to the concept of "population readiness" as well as country resources. This does not imply that the country does not need or should not have aid. It does mean that the U.S. with limited resources should be more selective in the countries it aids. Selection should be weighted in favor of mutual benefit of a concrete rather than an abstract nature.

Food Balance Sheet

The USDA prepared a food balance sheet for the 1958 as part of a study of the world food budget. This report indicated that total caloric intake per capita per day amount to 2,340 grams. This diet (according to nutritional standards) was adequate in proteins and fats but 35 calories deficient.

Revised food balance sheets resulting from this study showed little change in the fat and protein content but the average caloric intake was higher.

The 1959-61 average was 2,525 calories compared to 2,568 for 1956-58. The decline was mostly attributed to increase in population.

Difference between the 1958 balance sheet and the sheets submitted with this report were of course due to the 3 year average in addition to inclusion of more food items in the food balance.

The Egyptian food balance sheet constructed on the basis of available production data must be used with caution. At best the indicated total calorie intake may vary by as much as ten percent due to error in the basic data* and incompleteness. In addition little information is available on food distribution items such as waste, animal feed and extraction rates. Also changes in stocks level for many commodities are sketchy.

An error of five percent in a population estimate (this is possible for the UAR) presents additional problems when computing per capita caloric intake. The population distribution in terms of age, sex and income level are additional variables that cloud the per capita consumption estimate and limit the usefulness of the figure. Attempts to measure improvement in nutritional or dietary level over time or deficiencies with respect to some nutritional standard could be misleading if not erroneous when using data currently available for balance sheet construction. A food balance based on total food supply produces a measure limited to broad generalizations and relative comparisons.

A food balance sheet based on consumption studies provides a superior measure of nutritional and dietary level and done over a period of time can measure change. Future work on balance sheet improvement should move in the direction of consumption and distribution studies and surveys.

It is this type of balance sheet that provides important information to base changes on food import patterns and help officials decide on a policy that could be significant in terms of creating markets for U.S. agricultural products.

* There is also considerable modifications of the data involved in use of the caloric content of foods. For some food item there is no caloric content measures available.

GENERAL CHARACTERISTICS OF AGRICULTURE

Economic Significance of Egyptian Agriculture

Today, the Egyptian Government is placing major emphasis on industrializing the country. However, while the impact of industry is becoming more pronounced on the economic life of the country, about two-thirds of the national wealth is invested in agriculture. In addition, approximately one-third of the annual income is derived from agriculture while two-thirds of the total working population are engaged in this activity.

One of the most challenging problems facing the Egyptian Government is the rapid population ^{1/} increase that occurs at the rate of approximately $1\frac{1}{2}$ to 2 million people every 10 years. This demographic trend places a tremendous burden upon those people responsible for developing the country's agricultural and industrial potential. Government officials in responsible positions unanimously agree that the only salvation is through intensive industrialization of the country. While agriculture is not to be slighted in the overall development plan, the limits in this segment of the economy are apparent under existing technology. Egyptian agriculture is faced with a multiplicity of problems, the solution of which requires considerable patience and understanding on the part of both government officials and farm people. Up to the present a hold approach has been taken to develop agriculture and fashion it for its important role in the country's new economy.

For thousands of years, the UAR's most important basic resource---people---were largely neglected. It wasn't until recent years that some small progress has been made toward improvement of this resource. Underlying this improvement, of course, is education and herein lies the key to future economic development of the country.

Some developing countries have a serious problem with their human resource in terms of "inherent curiosity" and "desire to improve". This is not the case in the UAR. In this respect, the UAR is fortunate in possessing a human resource that readily lends itself to modern economic development.

Whether considering the subject of market potential, food balances or agricultural statistics, some general understanding of the Egyptian agricultural economy is essential. The following discussion provides a general background and gives some insight into the above-mentioned areas of interest.

The UAR has an area of approximately one million square kilometers or 238 million feddans. Total area under cultivation in the country amounts to approximately 6,314,000 feddans or 3 percent of the total area.

The total area that can be cultivated depends entirely on the level of land in relation to the nearest water supply. Economics of irrigation agriculture limit the lift of water to approximately 66 feet. This limits the total cultivable area to approximately 10 million acres--10,296,000 acres according to the 1960 census.

1/ The total population of Egypt according to the 1960 census was 25 million of which approximately 16 million people, or two-thirds were engaged in agriculture. About one percent of the people are located in the desert-oasis and Sinai peninsula. Population density is approximately 739 people per square kilometer.

Climate

The Egyptian area is characterized by a mild winter and a hot summer. However, the relative humidity is always low during the heat of the day, thus making the summer weather tolerable. The UAR can be basically divided into two climatic zones. The first comprises the Mediterranean Coastal area including the Delta. This zone has climate of the Mediterranean type characterized by a rainy, mild winter and a hot, dry summer. The second zone covers the remainder of the UAR south of Cairo. The climate of this zone is of the desert type characterized by a winter with very little rain, warm during the day and cold during the night. Summers are hot and dry during the day, but cooling towards the night. Climate of the narrow strip of land extending on either side of the Nile is influenced by the vegetation in this particular zone of the UAR.

The UAR's rainy season occurs between October and May, the heaviest rainfall being on the Mediterranean Coast. Here the annual mean rainfall is about 150 millimeters. The rainfall reaches as high as 180 millimeters between Alexandria and El-Borolles. The amount of rainfall decreases as you move southward with approximately 25 millimeters in middle UAR. The maximum rainfall over the Mediterranean area occurs in January. In the other parts of the UAR this maximum occurs in October and May.

The mean annual amount of rainfall over the sand desert area lying to the west of Alexandria ranges from 125 to 150 millimeters. This is important since it forms the basis of the economic enterprise of the Bedouins who live in the desert area and sow barley their only crop.

Soil

Soil provides the environment within which plant germination, growth and fruition take place. Over the years the Egyptian Government has been giving increased attention to this all-important, natural resource. They are studying their soils chemical and physical properties to improve crop production.

It is well known that the Egyptian soils are basically poor in nitrogen and phosphorous and that the rate of fertilization currently carried out does not correspond to the actual plant requirement. To achieve the goal of increased agricultural productivity it becomes imperative that the rates currently used be doubled in both organic and mineral content.

In general the soils of the UAR might be classified into several major groupings. First, and most important, is the alluvial type soil. This is a level, deep, black colored soil which is heavy to medium in texture. They constitute about 75 percent of the area under cultivation in the Delta region and throughout the Nile Valley. The second type of soil is the marine alluvial. This soil is rather heavy in texture, black in color and somewhat saline. It is found around the lake areas and areas adjacent to the lakes; Lake Maryut area being a prime example of this soil. Thirdly, there is residual calcareous soil that is light to medium in texture and extends along the Mediterranean Coast from Alexandria to Salloum. The remaining soil types might fall into either a sandy soil, sand dunes or a gravelly sandy soil or rocky hills.

A part of the 5-year improvement program for agriculture includes the promotion of research facilities and supplying information on soil condition and fertilization practices. There are several projects directed toward soil classification and bacterial inoculations.

Information is available about the productivity of the soils by districts. The soil productivity grades range from one through 36. There is also a productivity index computed which measures the relative degree of productivity of the soil by districts. The main purpose of discussing the classification of soil and describing the soil types of the Egyptian economy is to indicate that there has been a substantial amount of work done in this area and a distinct awareness of this problem with respect to agricultural productivity. Knowledge of the soil and its characteristics and the productivity of this soil within the various district is, of course, helpful in data collection and analysis.

The agricultural production year in the UAR has three distinct seasons. Most of the data produced about crops in the Egyptian regions is available on a season basis. The winter season or shitwi season lasts from mid-October to late December and the main crops consist of wheat, barley, clover, beans, flax, onions and lentils. The summer season or seifi lasts from the middle of January until about the middle of June during which cotton, rice, sugarcane, sesame and millet are grown. The nili season--otherwise known as the flood season--runs from the beginning of July until the middle of August. Maize, millet and rice are the major crops grown.

The crop rotation pattern

Most of the crops are rotated on a 2 or 3-year rotation plan. In the 2-year rotation scheme for winter crops, clover, beans, wheat, barley and flax are planted to about 50 percent of the area. They are followed by the summer or nili crops, mainly rice and maize. In areas close to the towns and cities, vegetables are included in the summer rotation plan. The remaining 50 percent of the area is either cultivated or planted to clover for one cutting or it is left fallow until planted with cotton as a summer crop.

The 3-year rotation pattern requires that the area be divided into 3 equal parts. The first is planted with either clover or left fallow until planted with cotton. The second part is devoted to beans and/or clover. Those crops are in turn succeeded by maize and/or rice. The third part is sown with wheat, barley, flax and then followed by maize and/or rice.

Both systems of rotation are used in the Delta. In middle UAR approximately the same rotation is used. However, sorghum replaces rice or maize, with the exception being the Fayoum area. In the Delta and basin area, onions and beans are grown extensively as winter crops. In the southern part of the UAR sugarcane becomes the main crop and has a 4-year rotation pattern.

Irrigation and Drainage

The irrigation and drainage system of Egyptian agriculture is completely dependent upon irrigation and there are two systems primarily used. The older system used is referred to as basin irrigation. It encompasses approximately 600,000 acres, and is mainly found in the southern part of the UAR. This system involves dividing the land into basins of various sizes and surround the rim by embankments to prevent the water from returning to the gradually falling river level for a period of approximately 30 to 35 days. At the end of this time, the water is allowed to flow back into the river and the crops are then planted on the sediment deposits provided by the flood waters. The crops receive very little tillage after this and no further watering. Under this system of irrigation the crop land produces only a winter crop. It remains fallow during the summer months awaiting the next flood season.

A somewhat newer system of irrigation is practiced on nearly 4 million acres in lower UAR and about 1½ million acres in upper UAR. The system of irrigation followed is referred to as perennial irrigation.

The perennial irrigation system is based upon a series of public canals with total length of approximately 20 thousand kilometers. These canals carry the water throughout the entire year to the fields. Water is diverted to the various fields-- each field receiving a fixed share by means of outlet culverts placed at the openings in the private ditches on the farms. The water distribution pattern to the fields is determined by the crop rotation system. During the summer about six days of watering is done then the system is closed 12 days. During the spring rotation five days of watering are allowed and the closed period lasts ten days. This system permits water in the main canal to flow steadily, providing water to approximately one-third of the area at a time, and withholding it from the remaining areas. This distribution system makes possible two to three crops a year from the cultivable land.

In southern UAR there are some areas where a combined system of irrigation is followed, using both the basin and perennial type. The approximate area under this combined system is about 375,000 acres. Coupled with the irrigation system is a complex drainage system which, of course, is just as important in the overall system as the irrigating canal. The drainage system performs the functions of freeing the soil of excessive water and evacuation channel for the irrigation canal. The Egyptian delta area is drained either by the year-round free flow to the sea or adjacent lakes. In those areas where the land is too low to be drained gravity pumps are used. A total of 1 million acres is pumped. This area is subdivided into 25 zones and each zone has a separate pumping station with an independent chain of drainage canals. Each pumping station serves from 10,000 to 15,000 acres. There are several large generators in the delta area which are connected to the pumping stations that provide power to operate the pumps.

Agrarian Structure

Beginning in 1960-61 the UAR launched their national economic and social plan. This plan has as its major objective doubling the national income in the next 10 years. Incorporated in the plan are many programs pointed towards the improvement of agriculture since it is one of the most important segments of the economy. Since the agrarian structure is so important to the economic development and thus the market potentials for agricultural products, a brief discussion of this phase of the agricultural development program will be discussed.

Prior to the revolution in 1952, structure in the UAR was characterized by a relatively small number of landowners. There were approximately 2,000 land owners receiving one-fifth of the total income derived from agriculture in the UAR.

The land reform law put into effect on the 26th of October 1952. This act placed an upper limit on the size of ownership and the appropriated land was redistributed to farmers and landless peasants. Currently the upper limit is 100 feddans or approximately 100 acres for any one person to hold or own.

Compensation was paid to those individuals from whom land was expropriated at the rate equal to 10 times the rental value of the land. To this was added the value of construction. The compensation was in the form of government bonds, with interest rates of three percent per annum, redeemable in 30 years.

Farmers and farm laborers who own less than five feddans were eligible to receive two to five feddans of expropriated land. Payment to the government for this land was made by the individuals at the price the government paid plus acquisition costs amounting to 15 percent.

It is required that every landholder must farm the land himself or rent it directly to a tenant farmer under conditions set forth in the law. The rental rates are fixed at a maximum of seven times the basic land tax.

Distribution of Land in the UAR

	1950				1961			
	Number of owners (000)	Area Feddens	Percent Land owners	Area owned	Number of owners (000)	Area fedden (000)	Percent Land owners	Area owned
Under 5.....	2642	2122	94.3	35.4	2919	3172	94.1	52.1
5 -.....	79	526	2.8	8.8	80	526	2.6	8.6
10 -.....	47	638	1.7	10.7	65	638	2.1	10.7
20 -.....	22	654	0.8	10.9	26	818	0.8	13.4
50 -.....	6	430	0.2	7.2	6	430	0.2	7.0
100 -.....	3	437	0.1	7.3	5	500	0.2	8.2
200 +.....	2	1177	0.1	19.7	--(1)	--(1)	--(1)	--(1)
Total.....	2801	5984	100.0	100.0	3101	6084	100.0	100.0

(1) Ownership limited to 100 Feddens.

Source: UAR Department of Census and Statistics.

Data in the above table show the changes that have occurred in land distribution. These changes have made an impact on both the social and economic development of the country. No other single table tells the Egyptian story better than this table on distribution of land ownership. It has many implications both from the standpoint of market potential and agricultural data collection. Some of these implications are discussed elsewhere in this report.

Tied-in with the land distribution program is a cooperative development program. These cooperatives are established among the farmers who acquire the requisitioned land. The cooperatives advance loans, provide agricultural supplies, and aid in marketing the crop.

Since the Agrarian Reform Act went into effect many economic and social changes have taken place. The disparity of income was somewhat reduced, however, the average size of holding is still rather small. Tenancy still exists and adds to the problem of fragmentation. In other cases ownership results in a smaller number of holdings. Net result of the program to date is about 1.7 million holdings with an average size of less than four acres.

A holding, ranging from one to ten parcels, is again planted to several different crops. The 3-year crop rotation pattern is followed in most cases. For example, one-half of the land is planted in cotton, one-third cereals and one-third clover and feed. This results in the cropping of very small crops that involve weight and inefficient production practices.

Recently the government instituted a program to increase the productivity of the land holdings. The small fragmented holdings made it difficult to operate an effective pest control program or to make use of new agricultural methods. Fragmented holdings also made it difficult to improve irrigation schemes. The consolidation program does not affect the individual property owner's rights, it will merely place the working of the land on a cooperative basis. The individual farmer still receives the benefits of his own efforts under this system.

The plans for consolidation of crops was begun in 1960-61 and covered an area of approximately 150,000 acres or about 100 villages. At the end of the current season (1963-64) approximately two-thirds of the total agricultural area will have been consolidated into more efficiently sized cropping units.

This project was instituted at the village level with the approval of the farmers. The farmers plan their own crop rotation according to their local conditions with the help of the local officer of the Ministry of Agriculture. This is the same officer responsible for collecting agricultural statistics in the locality.

Since the impact of this particular project will be significant in the near future and effect the entire agricultural production program, a brief explanation of its operation is included here. The project is developed in three stages. In the initial stage the following ideas are developed:

- A. Benefits of the project are explained to farmers.
- B. Farmers are encouraged to join the local cooperative.
- C. Maps of current rotation and planned crop rotation are displayed.
- D. The new crop rotation is agreed upon between the farmers in each "hode" and the local agricultural officer. (A "hode" is an area of which varies from 50 to 150 acres.)
- E. Cotton is organized in the first year leaving other crops for the following year.
- F. The crop rotation is planned so that no cotton field will be less than 20 acres. (A plot can be less than 20 acres in some cases.) The total area of cotton in a village cannot exceed one-third of the cultivated area.

The second stage is project execution and supervision and occurs between October and March. The last stage occurs during October and September and is oriented toward cooperative services. The services provided consist of feed, fertilizer, feed pesticide, and cash or credit through the agricultural credit bank. The cooperative helps the farmer with production operations, crop spraying and dusting, and purchasing of supplies with credit from the agricultural credit bank.

To date, most of the emphasis in this cooperative organization has been on the production stage. However, future plans call for improving agricultural marketing operations.

The effect of this plan will have immediate and long-range repercussions with respect to agricultural production and marketing. Limited results have shown a reduction of waste created by adjacent cropping of crops requiring different management practices. Pest control has improved and is possible to exercise at a lower cost. The land reorganization project will improve the mechanical operations on the farm. Also a substantial improvement in the collection of statistical data on agricultural both from a quantitative and qualitative standpoint will be a direct result of the land reorganization project. This particular project is undergoing continual study and review for possible improvement and modification of current techniques. While it is too early to appraise the results in terms of long-range benefits, one report on the initial or first-year execution of the project reads as follows:

"The total number of crops cultivated with cotton were reduced in one village where the project was executed from a total number of 651 cotton plots covering 750 acres, to 23 cotton plots covering 730 acres. Average plot size increased from one to 32 acres."

Using those preliminary results as an indication, the impact on agricultural production of this particular land reorganization program may well be substantial. One of the side effects will be the improvement in agricultural statistics.

AGRICULTURAL STATISTICS

Accuracy of Egyptian agricultural statistics varies widely for the many commodities estimated. However, depending on the purpose, figures for most commodities are could be classed as servicable. There is a well organized data collection system operating with a specific program for continual improvements.

The "system" used like most statistical systems does suffer from certain shortcomings, some controllable, others not. Following are mentioned a few of the more important problems and developments.

A serious drawback of the system is that all of the data collection activities are not embodied in one agency. Figures on area, important check data and yields for any particular crop comes from different agencies. The agencies involved will vary considerably with respect to the emphasis they place on their data collection function.

Until the literacy rate of rural residents is improved, the current system will be handicapped. Also, agricultural inspectors responsible for data collection vary with respect to their competence and work load, both of which affect the validity of the data collected. Currently, there is an attempt being made to correct this situation by using young professional agriculturalists during their training period.

Looking toward the future, a number of developments are underway which will significantly affect the quality of agricultural data. Aerial photos and objective yield surveys are now incorporated in the estimating system. More experience with these techniques will make them valuable estimating tools. The land reform program as it moves to consolidate small plots will also ease the problem of crop estimating. The Census program in Egypt is also improving through the use of better qualified individuals in taking the Census, and use of computing equipment for tabulation and analysis.

Check data derived from the distribution system will develop as government programs for the improvement of distribution facilities are completed i.e. new port area in Cairo replacing river bank unloading and the construction of 52 new grain storage silos.

Food Balances

As part of this project food balance sheets for the years 1956-61 were prepared.

In another Section of this report a detailed description is given of the Egyptian data system. An appraisal was made of the system and where necessary pertinent statistics were appraised. This approach provided a basis on which to evaluate the data used in preparation of the food balance sheet.

UAR Food Balance Sheet for 1955/56 - 1960/61

Item	: : Year	: Intake/Capita : Per year in Kqs.:	:Calories : in day :	:Protein/day : in grams	:Fats/day :in grams
Cereals.....	:1955/56:	186.2	1808	50.7	12.7
	:1956/57:	187.7	1822	50.3	12.5
	:1957/58:	178.4	1731	48.9	11.4
	:1958/59:	183.2	1784	50.0	11.8
	:1959/60:	190.6	1856	52.2	11.8
	:1960/61:	182.1	1771	49.7	11.6
	: :				
Roots & Tubers.....	:1955/56:	6.4	16	0.3	--
	:1956/57:	9.9	23	0.4	--
	:1957/58:	7.5	21	0.4	--
	:1958/59:	5.3	16	0.2	--
	:1959/60:	7.9	24	0.3	--
	:1960/61:	10.0	27	0.5	--
	: :				
Sugar & Honey.....	:1955/56:	17.5	174	--	--
	:1956/57:	17.7	172	0.1	--
	:1957/58:	16.9	162	--	--
	:1958/59:	17.6	169	--	--
	:1959/60:	18.6	180	--	--
	:1960/61:	15.5	149	--	--

UAR Food Balance Sheet for 1955/56 - 1960/61, continued

Item	: : Year	: Intake/Capita : Per year in Kqs.	: Calories : in day	: Protein/day : in grams	: Fats/day : in grams
Pulses & Nuts.....	:1955/56:	11.7	116	7.1	1.9
	:1956/57:	9.6	94	5.8	1.3
	:1957/58:	11.4	113	6.9	1.6
	:1958/59:	10.1	101	6.1	1.5
	:1959/60:	9.3	93	5.6	1.6
	:1960/61:	12.2	119	7.6	1.4
	: :				
Vegetables (fresh).....	:1955/56:	64.9	41	2.5	0.4
	:1956/57:	61.1	41	2.4	0.4
	:1957/58:	60.8	41	2.4	0.4
	:1958/59:	65.0	51	3.1	0.3
	:1959/60:	71.7	58	3.4	0.4
	:1960/61:	73.5	59	3.5	0.4
	: :				
Fruits.....	:1955/56:	65.6	152	2.3	0.9
	:1956/57:	42.5	106	1.7	0.6
	:1957/58:	42.3	107	1.6	0.7
	:1958/59:	41.5	95	1.5	0.7
	:1959/60:	40.3	91	1.4	0.7
	:1960/61:	44.1	104	1.6	0.7
	: :				
Meat.....	:1955/56:	13.5	57	4.9	3.8
	:1956/57:	13.7	56	5.1	3.9
	:1957/58:	10.6	56	4.9	3.6
	:1958/59:	10.1	51	4.7	3.4
	:1959/60:	9.6	48	4.5	3.1
	:1960/61:	9.5	47	4.3	3.1
	: :				
Eggs.....	:1955/56:	1.1	4	0.3	0.3
	:1956/57:	1.2	5	0.4	0.4
	:1957/58:	1.1	5	0.4	0.4
	:1958/59:	1.0	4	0.3	0.3
	:1959/60:	1.1	5	0.4	0.4
	:1960/61:	1.1	5	0.4	0.4
	: :				
Fish.....	:1955/56:	5.1	21	2.9	1.0
	:1956/57:	4.4	17	2.3	0.7
	:1957/58:	4.6	19	2.5	1.0
	:1958/59:	4.4	18	2.5	0.88
	:1959/60:	4.5	17	2.5	0.9
	:1960/61:	4.7	19	2.6	0.9
	: :				
Dairy.....	:1955/56:	59.1	136	6.1	9.2
	:1956/57:	43.9	108	4.6	7.5
	:1957/58:	41.3	101	4.3	7.0
	:1958/59:	40.9	100	4.2	6.9
	:1959/60:	44.4	107	4.7	7.4
	:1960/61:	42.7	103	4.5	7.1
	: :				

Continued

UAR Food Balance Sheet for 1955/56 - 1960/61, continued

Item	: Year	: Intake/Capita : Per year in Kgs.:	: Calories : in day	: Protein/day : in grams	: Fats/day : in grams
Oils.....	:1955/56:	3.9	95	--	10.8
	:1956/57:	4.3	102	--	11.6
	:1957/58:	5.0	122	--	13.7
	:1958/59:	4.8	118	--	13.3
	:1959/60:	4.7	111	--	12.6
	:1960/61:	5.2	126	--	14.3
Totals.....	:1955/56:	435.0	2,620	77.1	41.0
	:1956/57:	396.0	2,546	73.1	38.9
	:1957/58:	379.9	2,478	72.3	39.8
	:1958/59:	383.9	2,507	72.6	39.0
	:1959/60:	402.7	2,590	75.0	38.9
	:1960/61:	400.6	2,529	74.7	39.9

Scope of the UAR Agricultural Data System

The agricultural data system in the UAR can be divided into three areas. The first area is devoted to the collection of current agricultural statistics. The collection of these data constitute the major part of the work of the Department of Agricultural Economics within the Ministry of Agriculture. Estimates of area production and prices fall in this category and are collected on a regular time schedule.

Another major area of data collection deals with statistical data that are relatively static in character and are collected at longer but regular intervals. The data pattern describing some economic or social situations does not change greatly from one period to the next. Therefore, in order to appraise these situations and measure changes over time, information is required in considerable detail. The collection of this type of data is very expensive and time consuming compared with current statistics.

The third major area of data collection requires surveys for special purposes, i.e. Agricultural Marketing Survey, Farm Management Surveys, etc.

Since the Egyptian economy is controlled and directed by the central government, the main purpose of statistics is to serve government decisionmakers. It is the function of the statistical authorities of the country to supply data to the policy-makers, various quasi-government groups and some individuals to aid in planning and implementation of government policies.

The statistical agencies charged with collecting data for government use are responsible for data with a reasonable range of accuracy and within a given time period. Thus the importance of obtaining accurate and reliable data, with respect to agriculture can readily be seen. With agriculture constituting the major single source of income of the UAR and thus affects the majority of the population, those in charge of collecting agricultural statistics have to be extremely conscientious with respect to their responsibility.

Data collection in the UAR is not a recent activity. Unlike data systems in many countries of the world, the Egyptian data system grew gradually over a relatively long period. Early records indicate that information on cotton production was collected as early as 1820. Information about the cotton area was started in 1895. For most other crops, records began somewhere around 1911. The availability of detail on a particular crop depends on its importance in the economy. In some cases only acreage was obtained, in other cases both acreage and yield were collected. Thus, from its earliest beginning up to the present, the data system within the UAR might be said to vary widely with respect to its coverage.

The Department of Agricultural Economics, within the Ministry of Agriculture, is the primary agency responsible for the collection and the dissemination of agricultural statistics. It is also responsible for the statistical analysis and for execution of economic studies that are relied upon for guiding the agricultural policy of the country. The Department collects the data through the field offices of the Ministry of Agriculture.

To understand the functioning of the data collection system in the UAR it is essential to describe the administrative system in a summary manner. The country is divided into three main regions--each region in turn is divided into provinces and then into districts. The district is divided into agricultural units which in turn are broken down into villages. There are approximately 130 districts with 4,000 villages. Each village covers approximately 1,500 acres, and for every four villages on the average there is an agricultural supervisor responsible for the development of agriculture and the collection of statistical information within his locality.

The Ministry of Agriculture is organized on a Department basis with the Department of Agricultural Economics responsible for collection of agricultural data. In addition to data collection, the Agricultural Economics Department is responsible for planning and execution of policies for the agricultural economic development of the country. The Department, in order to accomplish these goals, is divided into four major sections: 1) Economics of agricultural production; 2) Land Economics and Agricultural Finance; 3) Agricultural Marketing and 4) Agricultural Statistics and Crop Estimates.

The sections of the Department have interrelated functions with the aid of field officers of the Ministry who are responsible for crop and livestock estimates. The agricultural statistics section is responsible for the following activities:

1. Preparation, tabulation, analysis, summary and publication of estimates of area and production of crops at specific times during the year.
2. Preparation of monthly reports on conditions and prospects of crops.
3. Livestock estimates.
4. Special statistical studies for economic investigation within the field of agriculture and statistics, experiments designed to improve the collection of agricultural data.

Unlike the data collective system of the United States which depends entirely upon the voluntary cooperation of individual farmers, the Egyptian system is completely dependent upon government personnel (field officers and/or rural teachers). A point of similarity between the Egyptian system and the system employed in the United States, is that both systems rely upon the farmer as the original data source. The local officers of the Ministry of Agriculture consult with the farmer when gathering information. The local officer is expected to evaluate the farmer's answers according to the conditions of the crop using their personal judgment to a considerable degree.

The Survey Department provides independent data on crop area obtained by actual field measurement. Check data are collected through processing plants, i.e. cotton ginnings, sugar milled, etc. Data are also provided by other departments of the Ministry. Slaughterings, for example, are obtained from the Veterinary Department. Damages caused by disease and plant insects are provided by the Department of Plant Protection.

Method and Procedure Employed in Collecting Agricultural Data

The degree of difficulty of data collection in a country like the UAR varies considerably. For some crops the system is adequate and provides usable information at the present time. In other cases the difficulties of data collection present a challenge.

The essential ingredients of the crop estimating formula are area and yield. The yield estimates are provided by the Ministry of Agriculture. The area estimates are provided by the Survey Department of another Ministry. The Ministry of Agriculture is responsible for combining the area and yield estimates into a production estimate for the crop.

The backbone of the Egyptian agricultural data collection system is the use of the approximately one thousand field inspectors. It is the responsibility of these men to work on a specific time schedule, following instruction from Cairo on data collection procedures.

Usually each locality is divided into a homogeneous unit or stratified by villages.* Within each village there is more similarity of the condition of the crop estimated than the area as a whole. A sample of villages representative of the area is taken and the farmers are interviewed. The data collected are assembled first for each locality and then for the district. A committee of inspectors from the various districts may be held for the purpose of checking the data and verifying any differences that may have arisen in the process of assembling the data. Tabulation of the data along with computation of weighted averages are forwarded to the Department of Agricultural Economics in Cairo.

In Cairo the data sent in by the field offices is tabulated and analyzed. Reports on the "condition" of the crops are reviewed. "Condition" according to the Egyptian definition refers to the physical state of the crops in the current year as compared with its condition or physical state for the same time of the previous year. This concept of "condition" is important because it ties the estimating procedure to the immediate past year. This concept differs from that used by the United States Department of Agriculture as they define "condition" as a percent of normal.

*Village refers to the area farmed by the people living in any one village--usually 1,500 acres.

In the central office the data forwarded from the provinces as compared with previous years estimates on a geographic basis. National estimates are then prepared and published. The estimating schedule calls for essentially two estimates to be made; a preliminary estimate, and a final estimate. This is true for most crops. The exception to this is in the case of cotton for which four estimates are made. Similar to the practice which exists in the United States, all crop estimates are strictly confidential until the time of their release. The Department of Economics prepares forecasts for certain crops. The forecasts are not tied to either yield, acreage or production but rather to the state or condition of the crops as compared with the past year. This provides an indication of probable production. No absolute production figures are released and the forecast is merely a general indication of production based on crop condition. For the government's purposes, this is all that is necessary to aid in decision-making with respect to exports or imports necessary to satisfy local needs. The forecasts are based upon all the facts as of a given date and it is assumed that weather conditions and damage from insects during the remainder of the growing season will be about the same as the previous year. If the weather or other conditions between the date of forecast and the time of harvest are not the same, actual production will depart from the forecast.

The Department of Economics prepares a forecast on the basis of reports received from the inspector at the beginning of each month. Inspectors forward information on crop condition for the past month compared with the previous year's condition estimate and what is expected in the future for each province. From this information a percentage ratio is computed. If the condition of the crop indicates that the yield will be the same as the final yield in the past year then the first ratio reported will be 100; if the expected crop yield indicated is less than the previous year the condition will be reported as less than 100. By the same token, if the yield indicated is greater than the previous year the condition will be above 100. The ratios calculated are weighted for each crop and the condition figure for each province is a weighted average of all the ratios calculated. The condition figure for the country is weighted by the estimated area of the crop in each province.

Preliminary and final estimates are prepared for most crops. The crops currently receiving such treatment are rice, cotton, wheat, onions, maize, peanuts, potatoes, and beans. The "preliminary" estimates are taken at an advanced stage of growth but prior to harvest. The field officer collecting the yield data relies upon his skill and experience to provide the best information available. The "final" estimates are made after the crop is harvested. The information is collected from the farmers and is based on the farmers' actual harvested production.

To illustrate in a little more detail, the procedures and techniques used in estimating wheat and cotton will be examined in detail. These two crops are typical and illustrate the methodology employed in crop estimating in Egypt.

Wheat Estimates

Wheat production presents a number of problems with respect to crop estimation that are peculiar to the nature of the crop; however, basic procedure is typical with respect to methodology. The area figures for wheat are received from the Survey Department in January and February. The figures are collected through the use of cadastral maps, approximately 50 percent of the total number of villages within each district taken at random are surveyed to obtain the area of wheat. (In practice other winter crops are surveyed at the same time.) Crop area in the surveyed villages is compared with the area of the crops in the same villages for a year in which the crops were completely enumerated. In this case, 1956 was the latest date. (Upon completion of the 1960 Census a new base will be used.) In a measure of change is computed and which applies to total figures for the nation, year estimates are based on both subjective and objective methods. The "objective" method refers to crop cutting surveys and are used in conjunction with the subjective methods for determining the yield figure to be used in arriving at a production estimate.

The collection of data for the first estimate takes place during the first half of May. Instructions and special forms are sent from the Cairo office to the inspector, before the time specified for collecting the data. At this time a special Committee meeting is held consisting of those officers within the Inspectorate responsible for the collection of data. It is the responsibility of this group to clarify the instructions and program the work. Essentially this same procedure is followed to a modified extent at the district level with a Committee of field officers. (In this case those officers are in direct contact with the farmer.)

It is the responsibility of each field officer to divide his specific area into homogeneous parts. He then selects from each homogeneous part a number of villages. Villages selected are to cover approximately 50 percent of the total area planted to wheat in each locality. It is at this point that he contacts the farmer and collects the data from each selected village. The data are expected to be representative (to as great an extent as possible) of the condition of the crop in the village and constitute not less than 25 percent of the area. Thus, through this procedure approximately $12\frac{1}{2}$ percent of the total area or total crop area of the country is used for determining a yield estimate.

It should be emphasized at this point that the officer's judgment and experience are extremely important with respect to accurate information about the crop. In actual practice, the officer consults with the farmer in the field about the specific yield potential of the crop. An exchange of ideas takes place about the crop condition and a judgment figure is arrived at based on the best information available at the time.

From the information collected a weighted average is computed for the district and for the Province as a whole. Upon receipt of these estimates in Cairo, they are tabulated, checked, and summarized. The total production for the UAR is calculated and the average yield for the nation is derived by dividing the total production by total crop area. The first wheat production estimate is released to the public during the second half of June.

In general, the same methodology is employed in collecting information to determine the final estimate - wheat estimate. Data for the final estimate is collected during the month of July after the crop has been harvested. The major difference between the preliminary and the final estimate is that the farmer (for the final estimate) is asked for his actual production. The accuracy of the final estimate depends largely on the accuracy of reporting of the production data and the devices used for checking this information. Final production estimates for wheat are released in the first half of August.

In addition to yield data and the publishing of production figures for wheat more detail is gathered at the time production information is collected. However, the detail with respect to production and yield by variety is published at a later date so as not to delay publication of the all important initial total production figure.

The previous discussion briefly outlines the procedure and methodology followed in the estimating of wheat. The same general procedure is followed for estimating the other major crops of the country. Certain minor crops along with fruits and vegetables are estimated using similar procedures except that for some crops yield figures are provided by other Departments or directly collected depending on the situation with respect to a particular crop. For these crops only a final acreage yield and production estimate is prepared.

Cotton Estimates

Cotton estimates receive considerable attention because they provide the Egyptian Government with a major share of its foreign earning. In addition, it is the major cash crop for most farmers. Thus, due to its strategic position in the Egyptian agricultural economy, it receives a great deal of attention in preparation.

Cotton is planted in March and April. The growing season is through the summer and is harvested in late September and October. Major deterrents to accurate estimating of cotton are insect infestation and the amount of humidity during the growing season. Since Egyptian agriculture is an irrigation type agriculture the amount of soil moisture is readily controlled. However, a major variable in estimating Egyptian cotton production is the amount of humidity in the air.

Due to its importance in the Egyptian economy particular attention is paid to the progress of the cotton crop. To do this four estimates are made for cotton production and yield. The first cotton estimate is released on or about July 15. The second estimate of cotton production is prepared during the last two weeks in November after the crop has been harvested. This estimate is quite comparable to the final estimate and is released sometime during the first week of December. The third estimate is released in the first part of February. The final estimate is based on the reports of cotton mills at the end of the ginning season and is released in mid-April. As is the case for wheat, cotton area estimates are prepared by the Survey Department. The Survey Department is instructed to survey 50 percent of the cotton universe, using the ratio method to arrive at an estimate for the total area. The crop area is surveyed in the month of May and June through the use of cadastral maps. Fifty percent of the total number of villages within each district are surveyed to obtain the area planted to cotton. The area planted to cotton in the villages surveyed are compared with the same villages in 1956. This provides a measure of change for each cotton variety and the factor used to determine production by variety.

Approximately half of the worlds long staple cotton is produced in the UAR. Because of this the first estimate is of primary importance to the world market. It is from this estimate that a first approximation of the world supply of Egyptian cotton will be made.

Cotton is estimated through use of both subjective and objective techniques. The data are collected for the first estimates in the last two weeks of September when most of the cotton bolls have opened and harvest is in progress. This estimate depends on the information that can be collected from the farmer and the personal judgment of the local data collecting officer. Procedure for collecting the data in the field is the same as the other crops. Special attention is given to the cotton estimate and involves a special set of checking techniques with respect to the tabulation of the data and a close scrutiny of the previous years' production and area estimates. The size of the "sample" taken for the first estimate reaches 25 percent of the total area in the delta region and approximately 40 percent in the southern part of the country. For the second estimate 60 percent of the total area planted to cotton is used.

The first cotton estimate of acreage, yield and production is released during the first part of October. Cotton estimates are needed in the form of ginned cotton.

The second estimate is based on partial ginnings. This means that the Department of Agriculture uses the ginning rate calculated for different varieties of cotton that were processed up to that point for estimating production. By applying these rates to the amount of seed cotton an estimate of ginned is obtained. From this procedure it can readily be seen that as the ginned cotton increases the factor improves so that the total estimates of ginned cotton will improve correspondingly.

The third estimate released early in February is based upon approximately 80 percent of the ginnings--the amount that is usually ginned up to January 31.

Final cotton production estimates are based upon complete ginning reports. The ginning season starts sometime in September and lasts through the end of March. The amounts of cotton ginned during the season, plus the amount carried over from the previous season and the cotton unginned at the end of the ginning season are all taken into consideration in the preparation of the final production estimate released on or about mid-April.

The mechanical procedures involved in the cotton estimating work are well defined. Oil information with respect to cotton production sent in by inspectors are held unopened until the date of release of the estimate. On the day of release the material received from the inspectors is by the cotton committee. The data is placed upon computing units and the necessary calculations are made and checked for each Province. The national production and yield for the various varieties are then calculated. The estimates are released on a special form which is signed by the Minister of Agriculture. The estimates are kept confidential until their time of release.

UNITED ARAB REPUBLIC

Cotton estimates (ginned basis)*

Crop year	Preliminary			Final	Departure of December estimate from final estimate
	October	December	February	April	
	- - - <u>Metric kantars</u> - - -				<u>Percent</u>
1958/59.....	8,905	8,877	8,840	8,918	-.5
1959/60.....	9,031	9,086	9,097	9,143	-.6
1960/61.....	9,851	9,756	9,388	9,564	+2.0
1961/62.....	6,945	6,929	6,682	6,713	+3.2
1962/63.....	9,641	9,613	9,098	9,147	+5.1

* Source UAR Ministry of Agriculture Reports.

As indicated earlier cotton estimates receive special attention in their handling at all levels of data collected and reviewed. Every possible check is employed. Particular attention is given during those years of severe insect infestation by either the cotton leaf worm or the bollworm.

The following table summarizes the cotton estimates for a number of years and indicates the difference between the second estimate and the final estimate. It can be seen from these figures that the estimating system with respect to cotton is fairly reliable. However, like most systems, there are times when certain variables are very difficult to evaluate. For the 1962/63 estimate there was a 5 percent variation between the second and final estimates. The reason given for the 5 percent over-statement for this particular year was failure to adjust for the high humidity at the time the objective yield survey was made.

This discussion of cotton estimating procedures, and methodology is included in this report to indicate the organized manner in which the Egyptian Government proceeds in determining the production estimates. The tabular presentation of the cotton estimates also serves to show that despite a well organized system and procedures there are times when certain variable will create difficulties producing estimate with a small error. It should be pointed out that this estimating problem is not peculiar to the Egyptian agriculture data estimating system.

In the case of cotton the objective indication is heavily relied upon. For some of the other crops where objective technique are employed the subjective technique may not be as heavily discounted. This is due to certain uncontrollable non-sampling errors which develop. This is more apt to happen in the case of estimating onions, corn, peanuts, potatoes, and beans. These crops have estimating problems which have not as yet been solved. For rice, cotton and wheat it might be said that the objective techniques have been developed to a large extent and relied upon almost wholly in determining the actual production estimates.

It is well known that in collecting agricultural data a major problem is the non-sampling error. We are well aware that the sampling error, as well as the non-sampling error effects the final results. While the sampling error can be controlled by having the proper sample size the non-sampling error can only be reduced to a minimum. Sampling procedures will not help to prevent non-sampling bias. Non-sampling errors can only be reduced through intensive training and close supervision of field personnel.

Under the existing system of collecting data in the United Arab Republic, two methods are used for estimating area of the crops. First, the inquiry of farmers by the local officers, and two, the independent objective measurements by the Survey Department. The first method is subject to indeterminate error and the second is time consuming and very costly. Both methods are extremely laborious. This situation is magnified by the fact that much of the area in the UAR is double and triple cropped. In addition to this there are many scattered smallholdings. This creates a major hinderance to enumeration if it is to be carried out in the most effective manner.

Sampling Technique and Existing Methods

Field Crops. The government currently is estimating crop area through sampling and ratio techniques. It has been demonstrated that a 25 percent sample is sufficient to estimate the area of each of the principal crops with a sampling area approaching 2 percent for the Provinces and about one-half of 1 percent for the country as a whole.

In a country like the UAR where the educational level of the farmer is relatively low the problem of collecting accurate information on a voluntary basis is quite difficult. For this reason, and others, it is necessary for the Egyptian Government to move in the direction of objective methods to supplement subjective estimating techniques.

The best estimating technique to-date is the measurement of crop yields using complete harvestings of objectively selected plots. The crop harvested from sample units is weighted and these sample units are of specific dimensions and selected according to a given procedure. In Egypt the country is stratified on a geographical basis; first stage of selection involves selecting villages at random from each stratum. These are the finest primary sample units. The second stage is selecting the field where the crop is growing. Finally the sample plots are marked in a random position in the selected field. This objective procedure provides a more reliable estimate of the population. Judgement bias is reduced to a great degree and the method is giving satisfactory results for a number of crops where it is now being employed in the United Arab Republic.

Livestock. Egyptian livestock statistics are estimated using the balance sheet approach. Benchmark figures on numbers are provided by the agricultural census. By adding imports and deducting slaughter (both commercial and farm) from the benchmark totals a current estimate is derived. Slaughter figures are provided by the Veterinary Department of the Ministry of Agriculture.

Livestock and livestock product estimates while serviceable for some purposes do not compare with the level of accuracy with crop estimates. Currently, several statistical research projects are underway to help improve livestock and livestock product estimates. Major effort has been directed toward improvement of milk product estimates. However, not much progress has been made in the way of developing a satisfactory estimating technique.

Appraisal of Crop Production Statistics

Field Crops. Cotton, cereals, maize, clover, onions and sugarcane are the major field crops of Egyptian agriculture. In addition to these crops, beans, peanuts, sesame seed, lentils, and flax are also important.

Cotton is the principal cash crop and main source of foreign exchange for Egypt. It generally accounts for 17 percent of the total crop area and 25 percent of the value of agricultural output. Approximately 25 percent of the cotton crop is processed locally with the remainder being exported.

There is strict government control over the various varieties of cotton planted along with the total amount of land allocated to cotton production. Acreage devoted to the various varieties of cotton production is done on the basis of the world supply and demand situation and the availability of certified seed. Since Egypt is a deficit food-producing country, it is also important to limit the amount of land planted to cotton to insure a supply of wheat for local consumption. Restrictions on cotton acreage specify that not more than one-third of the total cultivated area of the country be planted to cotton.

Since 1952 a number of measures were adopted in order to protect and help the textile industry to develop. A customs duty was placed on imports of cotton textiles to protect the Egyptian market from foreign dumping. Also, the importation of commodities for which there was a reasonable local substitute was prohibited. In the long run probably the most important step was the creation of an industrial consciousness supported by the development of training centers to build a skilled labor pool. In addition a technical course in spinning and weaving was instituted at the university level.

The government's major effort has been to modernize and enlarge existing textile mills. Practically every phase of the textile industry has been expanded ranging from the completion of the Mehalla factory for medium and thick spinning to the Port Said fishing net factory (capacity of 120 tons of net).

Attention has also been directed toward the production of finished goods. For example, B.V.D. underwear is now being produced at a rate of approximately 150 thousand dozen pairs. The Tayeh Tricot factory has a production capacity of 20 tons of blouses and pull-over garments. Also, the Miftah Company for industry and trade has been expanded to six thousand dozen cotton underwear.

Some of the textiles which are now being produced by the Egyptian textile industry are as follows: Dacron, poplin for suits of fine yarn, linen woven from 120 yarn, Swiss linen - plain and printed, mohair, plain velvet, nylon carpet, lace, net, nylon ribbons for oil presses, kurd for spinning factories, ribbed velvet, plaited material, plain and printed marquisette, nylon, cotton and slik, nylon cord for military purposes, cotton cord, heat and humidity resistant and silk threads for embroidery.

The following table indicates the increase in production of the various types of textiles since 1952.

United Arab Republic Textile Production - 1960

Products	1,000 Metric tons
Cotton yarn.....	105.0
Cotton textile.....	64.0
Wool yarn.....	7.4
Wool textile.....	2.7
Artificial silk yarn.....	13.0
Fibran.....	4.4
Artificial silk textile.....	8.7
Jute.....	11.3

Source: Department of Statistics and Census, United Arab Republic.

A large, modern textile mill has been established at Mehalla Al Kubra. This is supposed to be one of the largest spinning and weaving mills in the world. The site was selected on the basis of the humidity which permits the brittle cotton fiber to be worked without breaking. This plant has a capacity of 120 million yards of cotton cloth and two million yards of wool. The factory has 35 hundred looms and a quarter of a million spindles. Approximately 30 percent of the grey cotton cloth and finished cloth production is exported.

The current system of collecting statistics on cotton acreage, yield and production has performed well. The reason for this statement is that this is one area of production where detailed and reasonably accurate check data is available. About 25 percent of the crop is processed locally with the remainder exported, thus a somewhat detailed accounting of the crop is given. As indicated elsewhere in this report, the basic system employed for the collection of cotton statistics is essentially the same for collecting data on other agricultural commodities.

Wheat. Wheat is the major winter crop and accounts for approximately 18 percent of the total crop area and 12 percent of the value of agricultural output. Wheat is produced on approximately $1\frac{1}{2}$ million acres. Total production amounts to about 750,000 metric tons annually with an average yield of approximately 35 bushels per acre. The annual consumption of wheat necessitates the country import approximately 650 thousand tons per year.

There is no reason to be suspect of the wheat production estimates. Objective yield surveys have been used in estimating this crop for a number years. While the results from the subjective techniques are still available the objective yield indication is used for estimating purposes.

Most of the crop is locally consumed. The check data available from flour millss plus import data provides a fairly reliable supply figure for balance sheet purposes.

Rice. Rice is Egypt's second largest agricultural export. The total area under rice cultivation fluctuates between 400 and 800 thousand acres according to the amount of water available. Usually it accounts for about six percent of the total crop area and makes up about four percent of the total value of agricultural output. Since a large part of the crop is sold to local mills for processing, rice is important in the channels of trade. Rice accounts for about 10 percent of the total calories consumed per capita per day in the Egyptian diet. The consumption of this item varies with the amount of wheat that is available.

Since rice is used for local consumption, enters into the channels of trade and is exported, it presents a number of special problems with respect to estimating. In addition to the distribution problem rice is processed in what is termed large mills and small mills. The large rice mills are devoted exclusively to the milling of rice. The small rice mills are flour mills that have a conversion equipment which permits milling of rice in flour mills. The actual level of output of an individual mill has nothing to do with the size of the mill but refers to whether the equipment possessed by the mill is used exclusively for milling rice or whether conversion equipment is used. In some localities and for some times of the year, a substantial quantity of rice is milled by the so-called small mill. There are not accurate figures available as to the quantity of rice that is milled in these converted flour mills. It is estimated by Egyptian officials that this may run as high as 14 percent of the total rice crop.

The 1962 rice crop was thought to be overestimated by approximately 300 thousand tons. This was based on figures compiled by the Ministry of Supply. The Ministry of Supply is responsible for the rice entering into trade channels and thus controls the distribution of this commodity. However, the Ministry of Supply's figures are incomplete since they do not collect information from the so-called small mills. In addition it is possible to hold the rice in the unmilled state from four to five months. Thus the adequacy of the check data under the existing condition is incomplete. However, it doesn't seem probable that a system that is effective in estimating other crops within an approximate error of five to six percent would overstate the rice crop by 300 thousand tons.

In calculating the production quantities or use in the food balance sheet the current level of production as published by the Egyptian Department or Ministry of Agriculture appears to be acceptable.

The exporting of rice like other commodities is strictly controlled by the Government exporting organization.

Rice export figures as compiled by the government refer to that quantity of rice that has moved through customs. All rice that has cleared customs is considered to be exported whether or not it is in port status or warehoused in another port. Also, rice in transit, once it has cleared customs is considered to be exported.

Corn. Corn, or maize, is grown on approximately the same number of acres as cotton. However, it accounts for only 10 percent of the agricultural per value of agricultural output. Like wheat, corn is a staple in the diet of the average Egyptian and accounts for approximately 20-25 percent of the total caloric intake. Since it is a staple in the diet it is produced largely for home consumption and does not enter into the market channel to any extent. Production of corn is not sufficient to meet the local needs. This means that some corn must be imported. Over the past six years, imports have averaged about 50,000 metric tons annually.

Since corn is another commodity that plays an important part in the diet and does not enter into the trade channel to any great extent, it also present difficulties with respect to accurate check data. The local agricultural official responsible for estimating the corn yield is aware of the problem involved with respect to corn production. When these yield estimates are made the official is in a position to evaluate the farmer's judgment. Since the local official covers a relatively large area, his judgment about the current crop is relatively superior to that of the farmer. There is no good reason to believe that the corn production estimates released by the government is subject to any unusual estimating error.

Sorghum. Sorghum usually is planted on four percent of the crop area and amounts to approximately three percent of the total value of agricultural output. Production of sorghum is almost exclusively confined to northern Egypt. While most of the sorghum is consumed domestically; it does move through commercial channels.

Sugarcane. Sugarcane is produced on approximately 120,000 acres. Approximately 90 percent of sugar cane is produced in Upper Egypt, the remaining 10 percent is distributed throughout the country. The sugarcane produced in Upper Egypt moves mainly through the sugar mills. In the remaining parts of the country it is grown for chewing and making juice. Egypt produces approximately 320,000 tons of sugar annually. This is sufficient to meet the local needs.

Sugar contributes approximately six percent of the total calories consumed per capita per day. There is no reason to believe that the sugar consumption statistics are not substantially correct.

Figures on sugar production are fairly complete. Aside from the usual acreage yield and production, there are figures on the weight of manufactured cane sugar, the percentage of crude sugar production, the production of molasses, the number of presses, quantity of cane used in the production of molasses, and the percent of molasses produced. In addition, information is available on prices and costs of production of sugarcane.

It is estimated that approximately 10 percent of the cane is chewed, or otherwise used for food.

The production of sugarcane is in terms of a 4-3 system. This refers to dividing the field into four parts and leaving one part fallow then rotating the crop. In this way, one-fourth of the land devoted to sugarcane is left fallow or one-third of the crop is replanted each year.

"Horticultural Products". Fruits and vegetables are planted on approximately a half-million acres each year; this is equivalent to six percent of the total crop area. They account for approximately nine percent of the total value of agricultural output. These crops move freely through the commercial channel of trade. The favorable climate in the UAR makes it possible to grow fruits and vegetables throughout the year. This is particularly important during the winter time since it places the UAR in the position to supply foreign markets. The European market is particularly lucrative with respect to fruits, vegetables, and flowers during the winter season.

Together, fruits and vegetables make about five percent of the local diet in terms of caloric intake per day. More important from a nutritional standpoint are the vitamins and minerals supplied by the fresh fruits and vegetables.

Because of the somewhat limited storage facilities in the UAR, the production moves directly into fresh market channel or is processed. In the case of fruits, the trees in many cases perform the storage functions. This is accomplished in part by control of the fruiting of the trees and staggering plantings of the other fruit and vegetable crops.

Statistics are available on fruits and vegetables in considerable detail. Data is available not only on a season basis but also by districts throughout the country. However, due to the unusually large number of small crops of vegetables and fruits they present a problem in terms of objective yield measurement. For many of the fruit and vegetable crops yield data are supplied independently by the horticultural department or other agencies concerned with fruit and vegetable production. From a statistical standpoint this leaves Department of Agricultural Economics at a relative disadvantage in preparing accurate estimates of fruit and vegetable production. It is quite possible that fruit and vegetable production tend to be under estimated.

One exception would be the production of dates. Date yields are supplied to the Department of Economics by the Horticulture Department. There seems to be some difference of opinion with respect to the relatively high level of data yields.

Accurate estimate on tree numbers presents an additional problem. Approximately 60 percent of the date palms are found in the southern part of the country. The date palm in this area grow in clumps rather than as an individual tree. This compounds the tree counting estimate problem. Thus, with an indeterminate tree count and a relatively high level of data production the error in the date production figure could be unusually high.

Flowers and Ornamental Plants. Flowers and ornamental plants are usually found concentrated around the large cities. Roses, chrysanthemums, carnations, sweetpeas, gladiola, tuber rose and iris are the flowers mainly grown. Recently the Egyptian Government has undertaken an expansion program in flower production. It is hoped that the European flower market will provide a new lucrative export market.

Recently, a new farm of 175 acres was developed to produce gladiolas for the European market. Future plans call for increasing this acreage with eventual export earnings rising to approximately 10 million dollars annually. The distribution of this commodity is handled through a Lebanese firm with market outlets throughout the European market.

Appraisal of Livestock Production Statistics

Livestock production plays an important role in Egyptian agriculture. Figures for 1959 indicate that livestock and livestock products account for about 20 percent of the total income from agriculture. Not only is the livestock important with respect to its dominant role as measured by the value of agricultural output, but it is an important source of protein for the national diet. However, like most developing nations, the protein is a weak link in the diet of the people.. Livestock as a protein source now and in the future does not look encouraging. Livestock production will always be limited due to the limited amount of land available for producing livestock feed. However, the Egyptian Government is using the resources it has and also is carrying out extensive research projects oriented toward livestock improvement. This includes breed improvement programs and research project to increase the yield per acre of livestock feed.

Considerable work is being done in developing the dairy cattle of the country. To meet the increased demand for milk production the Holstein-Friesian breed has been introduced to upgrade the local cattle. However, even if optimistic production goals are met a desirable milk consumption level will not be achieved.

The most important species of livestock in the UAR is the water buffalo. It is a dual purpose animal used for power and milk. The milk has a high butterfat content averaging approximately seven percent fat. Milk production from buffaloes is quite variable with the average ranging from 1500 to 4000 pounds per lactation. The bull calves are usually slaughtered as vealers because of the high value of milk they consume. Also, because of their vicious temperament they do not make desirable work animals.

Milk production statistics are not as accurate as statistics on the major grain crops. In fact, meat production and milk statistics are probably the weakest link in the Egyptian agricultural data chain. The government has continuing statistical research projects to improve the collection of data on milk and meat production. Some headway has been made and it is felt that in the near future, milk production and meat statistics should improve substantially.

Since there is little check data available the evaluation of the dairy and meat statistics is purely subjective. If one were to make an appraisal of the meat and dairy statistics with respect to dietary use, judgment would indicate that the estimates are probably understated. One indication of this is the dominant role played by cheese in the rural diet. Through inquiry and personal observation, the quantities consumed appear to be larger than indicated by current milk production estimates. However, lacking consumption study figures, this is a subjective evaluation.

Poultry. Poultry production has received considerable attention due to the increasing demand for eggs and meat. Most of the farm poultry cannot be identified as a distinct breed. They cover a wide range of body characteristics. There are, however, two distinct Egyptian poultry breeds. Both breeds are being improved and in addition, standard breeds such as Leghorn and Rhode Island Red and Plymouth Rock are being imported. These breeds are being developed by government experiment farms and will be distributed to the farmers.

From observation and inquiry, some appraisal of the poultry intake of the average person was estimated. First impression of the amount of poultry in the diet is misleading. While there are apparently large numbers of birds they are relatively small and poorly fleshed due to both their native characteristics and limited feeding of a poor ration. The same observation holds true for pigeons. In addition, while pigeons are consumed, they serve another purpose. The major purpose of the large number of pigeons in Egypt is for the production of manure.

Appraisal of Fisheries Statistics

Since Egypt has a natural limitation to the development of agricultural land and with a large body of water bordering the country, it is natural to turn to the development of commercial fishing. Considerable experimentation and research is being devoted to this alternative source of food. Currently, fish do not make up an important part of the total diet. However, like fruit fish supply other elements in the diet that are nutritionally important.

Statistics on Egyptian fisheries are rather limited. Because fisheries are relatively unimportant in the total economy at this point, statistics have not been developed to any great extent. The total output of Egyptian fisheries is estimated to range around 100 thousand metric tons per year plus or minus 10 percent. Fishery statistics available indicate that approximately 25 percent of the catch comes from the Mediterranean and Red Seas. About 60 percent of the country's production is obtained from lakes and 15 percent from the Nile River. This is another item in the diet that could well be underestimated because of the close proximity of most of the population to the source of supply. There is no way of determining how many fish are caught in the network of irrigation and navigation canals which cover most of Egypt.

APPRAISAL OF MARKET POTENTIAL

Introduction

Appraising the market potential for U. S. agricultural products in the UAR presents a number of serious problems, the nature of which prevent any clear cut appraisal. If any "market potential" at all is to be found, the analysis of necessity must be carried out in an optimistic vein. There can easily be found as many negative as positive factors in evaluating market potential in Egypt. However, the final conclusion will be conditioned by the weighting of the variables considered.

Because of the limitation of time and data, the appraisal must be brief and somewhat limited in scope. In view of the many unknowns, however, it is doubtful whether a more penetrating analysis could be justified at this time.

One approach to a cursory appraisal is an examination of some of the factors important in both the short and long run market situation. This involves the past performance and accomplishments of the economy, current trade position and market structure.

Currently the Egyptian Government is experiencing financial difficulty due to a shortage of foreign exchange. Record trade deficits are being run up. The USAID program and PL 480 funds are being used to help alleviate this current financial crisis. It is assumed that factors causing this situation will be remedied in the near future, i.e. long-term loans, improved cotton and rice crops and markets.

The stated goal of the government is to double national income in ten years. At the present, the rate of increase has fallen off but efforts are being made to make up for lost ground. Past performance, however, has been encouraging since the national income increased about 45 percent in a 5-year period.

The Egyptian Economy

The most recent figures available on price level indicates that it has been relatively stable. Both wholesale and consumer price indices have changed little since 1957. A tight control over the economy along with rationing has made this possible. However, there are shortages of some goods and many luxury type items are unavailable.

Total agricultural production has increased by 17 percent from 1956 to 1960 as measured by the production index. While some increases may be expected for the future it is doubtful whether that rate of increase can be maintained.

In 1961 U. S. exports to the UAR totaled 97.1 million dollars. Most of this was achieved under the Food for Peace program with only 7.4 million dollars of hard cash sales. On October 8, 1962, a 3-year Title I, PL 480 agreement was negotiated providing for a substantial share of Egypt's food import requirement.

Agricultural production is likely to keep up with increases in population for the next 3 years. To the extent that it doesn't, the population's diet would be decreased; however, this would not present an immediate problem. Thus, the only market potential for the next 3 years is in the area of usual marketings.

What happens after 1966 depends largely on how much Egypt can modify the population increase within the next three years. Both a medical and educational program is being pushed and this is referred to by some as "the second high dam."

Assuming a relatively high rate of economic growth and control over the population increase, a cash market for U. S. farm products after 1966 may be more of a reality.

Agricultural Import Commodities

Wheat is one of the staples in the average Egyptian diet. In terms of calories, it accounts for approximately one-third of the daily caloric intake. The United States Government is currently supplying the Egyptian Government with a major share of its wheat imports. The Public Law 480 program under Title I agrees to provide wheat, over the next 3-year period, totalling 4,450 metric tons with a total market value of \$275 million.

It is doubtful whether Egyptian agriculture will ever be able to produce enough wheat for its own needs. There are a number of reasons for this, both in the short-and-long run. The only possibility for self-sufficiency would lie in a drastic change in diet. However, this is very unlikely. Also, wheat production is not well suited to Egyptian soil and climatic conditions. Considering the type of soil wheat is grown on, the average yield of 35 bushels to the acre could be considered low. However, as long as wheat is important in the diet there is no alternative but to produce wheat. If there should be a substantial shift out of wheat as the economy develops, and earnings are generated to purchase wheat in the open market, the United States should be in a position to take advantage of any market potential in this area.

Markets, in the long run, might be realistically considered for dairy products, poultry, vegetable oils, and tobacco. There are products which the UAR will require and never be able to produce enough for her needs. Whether the United States is able to secure a part of the hard currency market that may eventually develop will depend in part on how the current aid program is handled.

Marketing Facilities

In general the food distribution system in the UAR is, perhaps, 50 years behind the times. Very little refrigeration exists at the retail level and modern packaging for the most part is unknown. A large share of the food is moved into consumption through hundreds of thousands of small shops and peddlers. Milk, for example, is dispensed from cans attached to a bicycle and delivered to the door. Sanitation throughout the retail stores is at a very low level.

The following table provides some insight into the distribution system. The ratio of customer to retail establishment is very low and is an indication of the vast amount of inefficiency which exists in the system.

Workers and establishments in the distribution trades and related services, 1960

Function	Workers	Establishments
Wholesale trade.....	33,056	7,765
Retail trade.....	354,471	219,638
Banking and finance.....	12,667	1,993
Financing and commercial service.....	11,433	1,934
Transport.....	31,555	2,778
Storage.....	4,236	1,547
Social service.....	55,391	42,188
Entertainment.....	12,891	1,861
Personal service.....	199,145	110,761

Source: UAR 1960 population census.

Promotion

Product promotion as practiced in the United States is unknown. While communication facilities are available they are strictly controlled by the government and used almost exclusively for governmental purposes.

APPENDIX

Table 1.--United States. Agricultural exports to the United Arab Republic, P.L. 480 and other by value, 1961.

Program exports	:	1,000 dollars
Public Law 480	:	
Title I	:	68,370
Title II	:	21,386
Public Law 87 - 195	:	
Section 402	:	8
	:	
Total program export:	:	89,764
	:	
Non-program exports :	:	<u>7,371</u>
	:	
Total exports :	:	97,135

Source: United States Department of Agriculture Foreign Agricultural Trade, February 1963, p.59

Table 2.--United States. Agricultural exports to the United Arab Republic, by commodity and value, 1961

Commodity	Dollar sales ('000)
Wheat and flour.....	72,165
Rice.....	54
Feed grains.....	5,049
Tobacco.....	945
Vegetable fats and oils.....	5,074
Fruits and preparations.....	60
Vegetables and preparations..	142
Meat & meat preparations.....	10
Animal fats.....	4,389
Poultry.....	313
Other meats.....	10
Dairy products.....	3,426
Other.....	5,498
Total.....	97,135

Source: U. S. Department of Agriculture,
Foreign Agricultural Trade, January 1963, p.36

Table 3.--United Arab Republic. Trade Balance, 1952 and 1958-62.

Year	Imports	Exports	Balance
	- - - Million L.E. - - -		
1952.....	230.0	150.1	- 79.8
1958.....	238.2	163.8	- 74.4
1959.....	214.4	154.3	- 60.1
1960.....	225.1	191.6	- 33.5
1961.....	230.8	161.2	- 69.6
1962 <u>1/</u> ..	263.3	134.9	-128.4

Source: United Arab Republic Dept. of Statistics and Census.

1/ Eleven month period.

Table 4.--United Arab Republic. Imports of selected agricultural commodities, 1961

Item 1/	Million dollars
Wheat and flour.....	72.3
Maize.....	6.2
Fruits.....	2.9
Beans, dry.....	.4
Edible oils.....	8.5
Tobacco.....	14.4
Coffee.....	3.9
Tea.....	24.1
Vegetables.....	2.7
Meat products.....	2.9
Total.....	138.3

Source: United Arab Republic Department of Statistics and Census.

1/ Figures shown do not represent total food imports due to some food items being classified as "other."

Table 5.--United Arab Republic. Price Indices, 1952-60

Year	Consumer prices	Wholesale prices of industrial materials
1939 equals 100		
1952	317	388
1953	296	377
1954	284	374
1955	283	376
1956	290	462
1957	302	461
1958	302	435
1959	303	457
1960	304	451

Source: United Arab Republic Department of Statistics and Census

Table 6.--United Arab Republic. Index of
agricultural production, 1952-60

Year	Total agri- cultural production	Food production	Plant production	Livestock production
		Percent - - - - -		
1952	110	109	106	122
1953	109	119	106	119
1954	120	132	117	131
1955	118	131	116	128
1956	122	137	118	140
1957	130	140	127	140
1958	131	137	127	142
1959	136	143	133	145
1960 ^{1/}	139	147	136	148

Source: United Arab Republic Department of Statistics
and Census

^{1/} Preliminary.

Table 7.--United Arab Republic. National Income,
1956/57 and 1961/62

Sector	1956/57	1961/62
	- - - Million L.E. - - -	
Agriculture.....	374	441
Industries.....	192	344
Construction....	32	99
Transport.....	58	114
Housing.....	67	78
Commerce & Finance	101	155
Other.....	243	325
Total....	1,067	1,556

Table 8.--United Arab Republic. National Income
from Agriculture, 1959

Item	Million L.E.'s 1/
Winter crops.....	119
Summer crops.....	199
Nili crops.....	37
Vegetables.....	31
Fruit & timber.....	18
Total plant production..	408
Dairy products.....	33
Livestock meat.....	41
Poultry.....	18
Fish.....	15
Other animal products.....	2
Total animal products..	109
Total agri. products....	517
Seeds.....	21
Fertilizer.....	27
Insecticide.....	2
Fodder.....	60
Fuel.....	11
Maintenance & Depreciation:	4
Imported cattle.....	4
Total costs.....	139
Income.....	378

Source: Dept. of Statistics and Census, United Arab Republic.

1/ Preliminary.

[illegible]

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